

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A computer implemented method for an auction comprising:
establishing an auction system which is accessible via a network, performs an auction for a set of items including an item and another item which is different than said item, and comprises a processor which generates a user interface for entering a bid ; ~~entering in said auction; system a bid for an item,~~
receiving a said bid for said item and a condition on winning said item which are being entered by a bidder by using said user interface; to identify an item, a bid value for said item, and a constraint for a set of items including said item
displaying on said user interface a bid table for indicating that said bid is one of a selected bid and an unselected bid during a course of said auction; and
formulating a winner determination problem including said condition on winning said item constraint as an integer program, and solving said integer program to determine whether said bid is a selected bid; [[,]]
receiving an edit to said condition which is entered by said bidder by using said user interface, and updating said bid table to indicate that said bid is one of a selected bid and an unselected bid based on said edited condition; and
upon terminating said auction, updating said bid table user interface to indicate that said bid is one of a winning bid and a non-winning bid based on whether said bid is determined to be a selected bid;
2. (Previously Presented) A method according to claim 1, wherein the auction system is selected from a group consisting of an open cry auction, an ascending bid auction, and a descending bid auction.

3. (Currently amended) A method according to claim 1, wherein the condition on winning ~~constraint~~ comprises a plurality of conditions ~~constraints~~ which characterize combinations of bids from the bidder for ~~the~~ desired items within the auction system.
4. (Currently amended) A method according to claim 1, further comprising:
enabling the auction system such ~~so~~ that it is responsive to said a budget condition ~~constraint~~.
5. (Currently amended) A method according to claim 4, wherein the budget condition ~~constraint~~ is specified by the bidder.
6. (Currently amended) A method according to claim 1, wherein said condition on winning said item is ~~further comprising: enabling the auction system so that it is responsive to ~~constraints~~~~ selected from the group consisting of a maximum quantity condition ~~constraint~~, a minimum quantity condition ~~constraint~~, a precedence condition ~~constraint~~, and a general linear condition ~~constraint~~.
7. (Currently amended) A method according to claim 1, further comprising:
enabling the auction system so that it is responsive to seller conditions ~~constraints~~.
8. (Currently amended) A method according to claim 7, wherein the seller conditions ~~constraints~~ specify a minimum value for a combination of items.
9. (Currently amended) A method according to claim 7, wherein the seller conditions ~~constraints~~ specify a minimum value for a combination of a minimum number of items to be sold.

10. (Currently amended) A method according to claim 7, wherein the seller conditions ~~constraints~~ specify a minimum value for a combination of items correlated to a precedence relationship.

11. (Currently amended) A method according to claim 1, wherein said condition ~~constraint~~ comprises a linear condition ~~constraint~~.

12. (Currently amended) A method according to claim 11, wherein said network comprises the Internet, said user interface being displayed on a web page on the Internet.

13. (Currently amended) A program medium executable in a computer system for facilitating an auction, the program medium comprising machine-readable instructions to cause the computer system to execute ~~steps for~~:

establishing an auction system which is accessible via a network, performs an auction for a set of items including an item and other items which are different than said item, and comprises a processor which generates a user interface for entering a bid in said auction;

receiving a bid for said item and a condition on winning said item which are entered by a bidder by using said user interface;

displaying on said user interface a bid table for indicating that said bid is one of a selected bid and an unselected bid during a course of said auction;

formulating a winner determination problem including said condition on winning said item as an integer program, and solving said integer program to determine whether said bid is a selected bid;

receiving an edit to said condition which is entered by said bidder by using said user interface, and updating said bid table to indicate that said bid is one of a selected bid and an unselected bid based on said edited condition; and

upon terminating said auction, updating said bid table to indicate that said bid is one of a winning bid and a non-winning bid

~~establishing an auction system which is accessible via a network and comprises a processor which generates a user interface for entering a bid;~~

~~entering in said auction system a bid for an item, said bid being entered by a bidder by using said user interface to identify an item, a bid value for said item and a constraint for a set of items including said item; and~~

~~formulating a winner determination problem including said constraint as an integer program, solving said integer program to determine whether said bid is a selected bid, and updating said user interface based on whether said bid is determined to be a selected bid.~~

14. (Currently amended) A computer implemented method for facilitating an auction comprising:

establishing an auction system which is accessible via a network, performs an auction for a set of items including a first item and a second item which is different than said first item, and comprises a processor which generates a user interface for entering a bid;

receiving a proposal comprising a bid on said first and second items and a condition on winning said first and second items which are entered by a bidder by using said user interface ~~constraints specified by a participant in the auction, wherein the conditions constraints characterize combinations of items desired by the participant within said auction system;~~

displaying on said user interface a bid table for indicating that said proposal is one of a selected proposal and an unselected proposal during a course of said auction ~~generating a proposal based on the constraints specified by the participant using a column generation formulation, said proposal comprising a set of bids from the participant that satisfies all of the constraints specified by the participant; and~~

formulating a winner determination problem based including said condition on winning said first and second items ~~constraints~~ as an integer program, and solving said integer program to determine whether said proposal is a selected proposal, and updating a user interface based on whether said proposal is determined to be a selected proposal;

receiving an edit to said condition which is entered by said bidder by using said user

interface, and updating said bid table to indicate that said proposal is one of a selected proposal and an unselected proposal based on said edited condition; and
upon terminating said auction, updating said bid table to indicate that said proposal is one of a winning proposal and a non-winning proposal.

15. (Currently amended) A method according to claim 1 [[14]], wherein said integer program is expressed by the following, subject to conditions specified by bidders in said auction:

$$\text{Max} \quad \sum_{i,p} v_{i,p} x_{i,p}$$

where $v_{i,p}$ denotes a monetary value of a bid that bidder p has placed for item i , and, $x_{i,p}$ denotes a decision variable having a value of 0 when said bid is not in a winning combination, and 1 when said bid is a winning combination.

16. (Currently amended) A method according to claim 14, further comprising:
specifying combinatorial bids by interpreting the condition on winning constraints.

17-18. (Canceled)

19. (Currently amended) A method according to claim 14, wherein the condition on winning is constraints are represented by a linear relationship ~~relationships~~ between indicator variables on bids from the participant.

20. (Currently amended) A method of conducting an auction in an auction system in which plural items are offered for auction by a seller, and plural bidders place bids on said plural items, said method comprising:

establishing an auction system which is accessible via the Internet, performs an auction for a set of items including an item and another item which is different than said item, and comprises a processor which generates a web page including a user interface for entering a bid ; ~~entering in said auction system an offer of a item for bid, said offer including a seller constraint that describes said item;~~

receiving ~~entering in said auction system~~ a bid for said item and a condition on winning said item which are , ~~said bid being~~ entered by a bidder by using said user interface ~~to identify said item, a bid value for said item and a constraint for a set of items including said item;~~

displaying on said user interface a bid table for indicating that said bid is one of a selected bid and an unselected bid during a course of said auction; and

after said bidder has input said bid including said condition on winning ~~a bidder constraint~~, formulating a winner determination problem including said condition on winning bidder constraint and a seller condition constraint as an integer program, and solving said integer program to determine whether said bid is a selected bid

receiving an edit to said condition which is entered by said bidder by using said user interface, and updating said bid table to indicate that said bid is one of a selected bid and an unselected bid based on said edited condition; and

upon terminating said auction, updating said bid table to indicate that said bid is one of a winning bid and a non-winning bid,

wherein said integer program is expressed by the following:

$$\text{Max} \quad \sum_{i, p} v_{i,p} x_{i,p}$$

where $v_{i,p}$ denotes a monetary value of a bid that bidder p has placed for item i , and, $x_{i,p}$ denotes a decision variable having a value of 0 when said bid is not in a winning combination, and 1 when said bid is a winning combination,

wherein said user interface displays a space for a bidder to identify plural bidder

~~conditions~~ ~~constraints~~ comprising a budget condition ~~constraint~~ that specifies a total amount that a bidder is willing to pay for an item, a precedence condition ~~constraint~~ that indicates that bidder will win an item of plural items only if said bidder also wins another item of said plural items, an alternate precedence condition ~~constraint~~ which indicates that a bidder will win an item only if said bidder wins all of the items in a precedence set, a quantity condition ~~constraint~~ which specifies one of a maximum quantity and a minimum quantity of items that said bidder will win, and a general linear condition ~~constraint~~ which indicates a coefficient for said plural items and an upper bound and lower bound on a sum of coefficients for said plural items, and

wherein said seller condition ~~constraint~~ comprises one of a condition ~~constraint~~ indicating a minimum total amount that seller will accept for plural items, a condition ~~constraint~~ indicating a minimum quantity of items in said plural items to be sold, and a precedence condition ~~constraint~~ indicating that an item will be sold only if another item is sold.

21. (Canceled)